— प्रमुख वैज्ञानिक परियोजनाएं जैसे भारतीय मध्य वायुमण्डलीय कार्यक्रम और मध्य मण्डल-समताप-मण्डल-क्षोभमण्डल (एम. एस. टी.) राडार ।

पिछले तीन वर्षों के दौरान विभाग के मुख्य प्रयास संवर्धित उपग्रह प्रमोचक राकेट (ए. एस.एल.वी.), ध्रुवीय उपग्रह प्रमोचक राकेट (पी.एस.एल.वी.) और भू-तुल्यकाली उपग्रह प्रमोचक राकेट (जी.एस.एल.वी.) नामक प्रमोचक राकेट कार्यक्रमों और भारतीय सुदूर संवेदन उपग्रह (आई.आर.एस.) और इन्सैट-2 श्रृंखला के उपग्रह कार्यक्रमों से संबंधित थे ।

(ग) पिछले तीन वर्षों के दौरान अन्तरिक्ष अनुसंधान कार्यक्रमों पर खर्च की गई धनराशि का ब्यौरा निम्न प्रकार है :

(करोड़ रुपये में)

1991-92—460.10

1992-93—490.92

1993-94—703.98

Recommendations of the Expert Committee on the Development of Cryogenic Engine

5021. SHRI GHUFRAN AZAM : Will the PRIME MINISTER be pleased to state :

(a) whether it is a fact that the Expert Committee set up by Government to develop indigenous Cryogenic Engine had made certain recommendations in this regard;

(b) if so, what are the details thereof; and

(c) what is the decision taken by Government on these recommendations ?

THE MINISTER OF STATE IN THE PRIME MINISTER'S OFFICE AND THE MINISTER OF STATE IN THE DEPARTMENTS OF ATOMIC ENERGY AND SPACE AND THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BHUVNESH CHATURVEDI) : (a) Yes, Sir. Several teams of Department of Space (DOS)/Indian Space Research Oraganisation (ISRO) experts from various disciplines such as aerodynamics, propulsion, control, avionics, structures and mission and range safety, fabrication, materials have studied the development of a suitable indigenous cryogenic stage for Geosynchronous Satellite Launch Vehicle (GSLV).

(b) and (c) The chosen configuration including the specifications for the cryo engine and stage was based on reliability, cost effectiveness, heritage range safety requirements and maximal utilisation of Polar Satellite Launch Vehicle (PSLV) modules.

A project report was prepared based on this choice for the development of GSLV and was approved by Space Commission in August 1990. In October 1990, the then USSR made a proposal for the technology transfer of the cryogenic stage with specifications similar to those proposed earlier for the indigenous development and meeting all the requirements of GSLV. The same interdisciplinary team of experts, taking note of the advantages of this proposal prepared the revised GSLV Priject report within the over all cost envelope of the original report which was approved by the Spaces Commission & Government. Subsequent to the invoking of force majeure clause by GLAVKOSMOS of the agreement signed by ISRO with them in this regard, negotiation took place between GLAVKOSMOS and ISRO resulting in a modified Agreement deleting the technology transfer and training clauses, but obtaining additional satges. Now, with the experience and knowledge gained so far in cryo technology, ISRO has proposed to develop a Cryo stage indigenously. The Government has approved the proposal and the first indigenously built Cryo stage is expected in 1998-99 based on a success-based schedule.